

Transportation Research Focuses on DOE's Energy Resources Goals

The U.S. Department of Energy's goals call for increasing the efficiency and productivity of energy use, while limiting the environmental impacts. In support of DOE's goals, Argonne's Transportation Technology Research and Development Center brings together scientists and engineers from many disciplines to find cost-effective solutions to the problems of transporting people and goods from one place to another—issues like vehicle emissions and energy supply.

Argonne transportation research covers several areas:

- **Batteries** — Understanding the mechanisms of lifespan, abuse tolerance, and cost of high-energy lithium-ion batteries for advanced vehicle and utility system applications
- **Fuel Cells** — Investigating ways to make fuel cell vehicles a reality, including fuel reforming, computer modeling, and hydrogen infrastructure
- **Vehicle Systems** — Simulating and measuring the performance of potential advanced vehicle systems to identify the technologies, configurations, and engine control strategies
- **Emissions Control** — Developing advanced technologies to improve the fuel economy and overall performance of reciprocating engines, while at the same time, reducing harmful emissions
- **Applied Materials Research** — Evaluating ceramic and lightweight materials, advanced coatings and lubricants, thermal management systems, and manufacturing processes for advanced engines and vehicles
- **Assessment** — Analyzing the costs and benefits, including the energy and emissions impacts, of alternative transportation technologies



Energy Secretary Samuel L. Bodman learns about Argonne's ability to perform real-time imaging of a 1.9L Mercedes diesel engine that enables scientists to explore engine combustion to improve efficiency and reduce emissions.

- **Recycling** — Identifying processes to reclaim usable materials from auto shredder residue, reducing the amount of vehicle waste entering landfills

Argonne transportation researchers have won dozens of awards and hold hundreds of patents. Their work is supported by world-class facilities like the Advanced Photon Source, the Advanced Powertrain Research Facility, the Electrochemical Analysis and Diagnostics Laboratory, and the Fuel Cell Test Facility. Argonne's team approach enables researchers from 10 different Argonne divisions to address transportation problems.

Working with the U.S. transportation industry, Argonne researchers help improve processes, create products and markets, and provide cost-effective transportation solutions in support of DOE goals.

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